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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/066,542 | 02/05/2002 | Osamu Nakamura | 740756-2431 | 5042 |

22204 7590 01/13/2006

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| EXAMINER |
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JACKSON JR, JEROME

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| ART UNIT | PAPER NUMBER |
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2815

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------|--|--|
| Office Action Summary | Application No. 10/066,542 | Applicant(s) NAKAMURA ET AL.  | |
| | Examiner Jerome Jackson Jr. | Art Unit 2815 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2005.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,8-13,15-18,20-23,25-27 and 41-56 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☒ Claim(s) 1,3-6,8-13,15-18,20-22,25-27 and 41-44 is/are allowed.
 6) ☒ Claim(s) 23 and 45-56 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claims 1,3-6,8-13,15-18,20-22 and 41-44 are allowed.

Applicant's arguments filed 10/11/05 regarding these claims are convincing of patentability. Henley's "first portion" would include the gettering atom region which has a lower crystallinity than the "second portion" without the gettering atoms. Thus the Henley structure would not meet the claim 1 structure.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 23,25-27,45-56 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Henley, of record.

The previous rejection still applies. There are no recitations in claim 23 of a channel region containing the gradient and first and second portions as in allowed claims above. The semiconductor layer of Henley meets the claimed semiconductor layer structure as previously stated. Claim 45 likewise is rejected as there are no recitations the channel region contains first and second portions as in the allowed claims. Figure 8 of Henley shows a gate structure 803 with two layers, presumably the bottom layer being a gate insulating film. In the event applicant argues that the bottom layer is not a gate insulating film, such would be considered a completely obvious design for a FET structure as Henley as insulated gate electrodes enable low gate leakage current among numerous other advantages, are widely practiced in the art and take the name "MOSFET" or "MISFET". Top or Bottom gate design is also considered obvious routine design to one of ordinary skill and would not be considered a patentable distinction over Henley without unexpected results. Claims 49 and 53 are similar to

claim 45 and likewise rejected. Dependent claims as stated previously recite obvious applications of thin film FET devices and are not considered by themselves patentable additions to the independent claims.

Claims 23,25-27,45-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley in view of Wu '833.

In regard to FET design with insulated gates, Wu shows and suggests insulated gate design with SiN insulator. Moreover, Wu suggests bottom gate design for the advantage of removing the semiconductor layer away from the glass substrate. See the background of the invention. It would have been obvious to have practiced a thin film semiconductor layer as Henley with rare atom gettering sites to improve the semiconductor layer quality and further to have practiced bottom insulated gate design from Wu to improve FET device performance and use an advantageous two step mask process. Applicant's claims are obvious structure. Claims 49 and 53 are similar to rejected claim 23 and likewise rejected.

Applicant's arguments filed 10/11/05 have been fully considered but they are not persuasive for all claims. As stated above, arguments related to allowed claims are persuasive. Regarding rejected claim 23, there is no recitation of "channel region" with first and second portions as in allowed claim 1. Henley shows a semiconductor layer with a first portion containing rare gas gettering atoms and other portions above and below the first portion without rare gas atoms. The other portions have higher crystallinity as they do not contain the rare gas atoms. Accordingly claim 23 is rejected.

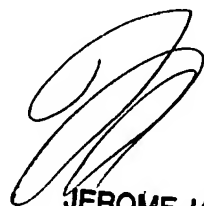
In regard to claim 45, the new rejection including Wu shows gate insulators and bottom gate design to be advantageous and obvious to practice with SOI including rare gas gettering portions as in Henley.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerome Jackson Jr. whose telephone number is 571-272-1730. The examiner can normally be reached on M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jj



JEROME JACKSON
PRIMARY EXAMINER